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accessible, and extensions of land supporting reindeer are found in the mountains south of the tundra belt in the midst of the *taiga*, where the forest cover is broken by uplifts that bear appropriate vegetation. Supplementing the reindeer is the chase, and wide spaces foster such activities. Goods such as bread, flour, tea, sugar, etc., which neither the forest nor the tundra can yield, are imported. Hunting and fishing are supplementary sources of food.

There are abundant statistics of production and area in the three chief sections of Siberia, and these complete the picture of the relations of man to his environment in this remote and widely extended land where the conditions of life are so uniform over broad stretches and where the frontier is not a narrow belt but a broad one half a continent wide.

PRINCIPLES OF REGIONAL GEOGRAPHY APPLIED TO RUSSIAN TURKESTAN

ARVED SCHULTZ. **Die natürlichen Landschaften von Russisch-Turkestan.** ix and 66 pp.; maps. (Abhandlungen aus dem Gebiet der Auslandskunde, Vol. 2.) L. Friederichsen & Co., Hamburg, 1920. 11 x 8 inches.

It is the introduction to this paper that is of chief significance. In it the author briefly reviews the principal articles dealing with the question of natural regions from Herbertson (1905) to Gradmann (1916). He then analyzes the relation between general and special regional studies and gives thirteen categories of structural facts necessary in a study of the natural regions of a country: orography, climate, genetic morphology, hydrography, dynamic morphology, agriculture, plant geography, animal geography, genetic anthropography, ethnography, demography, economics, and transportation. It is, of course, not assumed that these subjects will be developed with that fullness of detail that the specialist in these various fields would demand, nor that all of them are necessarily applicable to a given region; but rather that they should be developed where applicable in their geographical aspects. Had he stopped here the author would have laid himself open to grave criticism as being the newest addition to the long line of special pleaders who believe that they can trace geographical influences through the affairs of men without taking into account the multitude of ways in which man's course is directed independently of geographical circumstances and conditions. Such dependence upon the formula of geographical control or influence would not be objectionable if the result were labeled "suggestions." When the result is put forward as proof the effect is disastrous. For man does not react to nature alone; he reacts to life itself—to the past of his kind, to emotion, to desire, to ambition.

Each problem of man arises from a complex of forces, of which some may be geographical. These must be studied in their relationships or they have no meaning. Well does Schultz say that the ultimate object of geography is the ecology of man and his culture; and that it is a mistake to limit the study of natural regions to their physical geography without consideration of cultural regions in their anthropogeographical relationships.

The distinction made between the nucleal and marginal portions of a natural region is particularly suggestive. Often the marginal belt may be broad and marked by transitions from neighboring regions. It is the nucleus that has the distinctive features of the region. Its characterization is especially significant. Important also are the differences of environmental detail here and there, which may indeed have exceptional influence in the distribution of man and may significantly modify his life within the general framework of a region. Without attention to environmental details the whole regional treatment may prove weak or break down altogether.

After the author has laid down his principles of regional study he applies them to Russian Turkestan. The result has many praiseworthy features, especially from the pedagogical standpoint. Geographical data are conveniently and closely organized. The relation between the author's theory of regional treatment and his practice is, however, not always clear. In the chapter entitled "Bodenkundliche Gliederung von Turkestan" there does not appear to be any established connection between the physical characters of the soil and the distribution of people. Other chapters on the physical data are to less degree disconnected with the main theme, yet all suffer from a certain detached quality as if they were separate essays on as many different subjects. Doubtless they broaden the reader's background and hence have a certain value. The paper must be judged principally by Chapter 14, entitled "Die Landschaften Turkestans." Here we have the various regions grouped according to their physical character. But one looks in vain for penetrating reasons for the classification adopted. The chapter may be characterized as containing a series of dicta put into technical terms. For example on page 62 there is a discussion of the nucleal area of a region and the character of the border zone, but the whole matter is expressed in physical terms. The author runs through his list of categories, that is to say his outline, and tells us why he puts things together. But in hardly a single one of the 10 principal subdivisions or the 30 minor subdivisions have we a view of the life of the region in its physical setting. The lack of collation of geographical data is a serious disappointment after the excellent introduction. Nor is the reader greatly helped by a series of 15 maps which illustrate the paper and which give the plant and animal geography, the physical features, etc. They present appropriate and interesting data, but their relationships are left to the reader. In short, the whole paper is less a regional treatment than an essay on the material for a regional geography of Russian Turkestan. Three of the maps, those dealing with the ethnography, the distribution of population, and the agricultural divisions, are taken from the Atlas of Siberian Russia, published in 1914 by the colonization bureau of the Russian Government.

On Formosan Forests

Ryozō Kanehira. **Anatomical Characters and Identification of Formosan Woods with Critical Remarks from the Climatic Point of View.** 2 and 317 pp.; diagr., ills., bibliogr., index. Bureau of Productive Industries, Taihoku, Formosa, 1921. 10 x 7½ inches.

This excellent work is divided into four chapters. Chapter 1 deals with the vegetational character of the ligneous flora of Formosa. Chapter 2 includes the histology of the secondary wood of 386 species together with short notes on external and chemical character such as color, density, flavone content, etc. Chapter 3 is an artificial key for the identification of Formosan woods. Chapter 4 contains a summary and critical remarks from a climatic standpoint. As a basis for the latter, study was made of 160 species of Philippine woods and 181 species from Japan proper.

The island of Formosa lies between latitude 25° 30′ and 21° 40′ N. and longitude 119° and 122° 10′ E. The area is 13,890 square miles, of which about 80 per cent (7,024,000 acres) is forested. Wild peoples inhabit about two-thirds of the forest area.

Topographically the island may be divided into two parts, the mountain district and the plains district, the former being occupied by the central range of mountains which for the most part belong to the Paleozoic formation. This range extends north and south, and many of the highest peaks are more than 12,000 feet above sea level. The existence of these mountains in a tropical and subtropical region is conducive to a very rich forest flora.

The number of known indigenous plants comprises 169 families, 1,185 genera, 3,608 species, and 78 varieties. A study of the geographical distribution of the woody plants of the island shows for 998 elements the following results: Endemic, 36 per cent; China, 18 per cent; Japan, 14 per cent; India, 13 per cent; Malaya, 10 per cent; Philippines, 5 per cent; Australia, 3 per cent; Africa, 1 per cent. There is much evidence that the island was connected with the mainland of Asia until a comparatively recent period.

Three forest types are recognized: (1) Evergreen broadleaf forest, about 2,274,000 acres; (2) mixed broadleaf trees and conifers, about 424,000 acres; (3) pure coniferous forest, approximately 585,000 acres. The coniferous forests are first in economic importance because of the more serviceable timbers they produce. The trees of highest economic value belong to three families, namely, Coniferae, Cupuliferae, and Laurineae. Only a small part of the very rich and extensive forest area is subjected to any form of utilization, partly because of the savage inhabitants but more especially because the whole region is very difficult of access on account of the steepness of the mountains.

From the climatic point of view the Formosan flora may be divided into four zones, namely, tropic, warm, temperate, and frigid. The tropic zone is confined to areas below 1,000 feet altitude and has two distinct types of vegetation, that of the plains region and that of the tidal forests. The latter comprises two subtypes, the mangrove and the beach forest. *Ficus* is the representative tree of the plains district as mangroves are of the coast swamps. Most of the trees of the beach forest are of Indo-Malayan origin, owing their distribution probably to the sea currents. The vegetation of the plains region is highly variable since the land is mostly in cultivation.

The warm zone is mostly occupied by evergreen broadleaf trees, with very few scattered conifers, and comprises a large proportion of the forest. The principal families are Laurineae, Cupuliferae, Urticaceae, Euphorbiaceae, Leguminosae, and Ternstroemiaceae.